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Date: 12-9-02

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): Timothy P. O'Hagan

Serial No: 09/057,261

Filing Date: April 8, 1998

Examiner: David D. Knepper

Art Unit: 2654

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Title: SPEECH RECOGNITION SYSTEM TO MITIGATE MEMORY AND
PROCESSING REQUIREMENTS IN A REMOTE DEVICE

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APPEAL BRIEF

Dear Sir:

Applicant submits this brief in connection with an appeal of the above-identified application.
Enclosed is a check for \$320.00 for the fee associated with this brief.

I. Real Party in Interest (37 C.F.R. § 1.192(c)(1))

The real party in interest in the present appeal is TELXON CORPORATION, the assignee of the present application.

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II. Related Appeals and Interferences (37 C.F.R. § 1.192(c)(2))

Appellant, appellant's legal representatives, and/or the assignee of the present application are unaware of any appeals or interferences which will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. § 1.192(c)(3))

Claims 1, 2, 4, 5, 8-18, 20, and 22 are pending in the application. The rejection of claims 1, 2, 4, 5, 8-18, 20, and 22 is appealed.

IV. Status of Amendments (37 C.F.R. § 1.192(c)(4))

No claim amendments have been made subsequent to the final rejection of June 6, 2002.

V. Summary of Invention (37 C.F.R. § 1.192(c)(5))

The present invention relates to a speech recognition system which performs speech decoding at a mobile terminal (p. 3, ll. 23-24). A host computer sends a GUI file which has at least one syntax file and at least one dictionary file attached thereto (p. 14, ll. 13-15). The dictionary file(s) and syntax file(s) contain phonemic data and production rules to provide for speech recognition (p. 28, ll. 15-21). The syntax file(s) and dictionary file(s) are content specific to facilitate decoding primarily only utterances made by a user associated with a display generated from the GUI file. As a result, speech recognition by a mobile terminal is effected quickly and with much less processing requirements than conventional systems, which store syntax files, phoneme files, and dictionary files that are comprehensive enough to decode almost any utterance by a user (p. 13, l. 29 - p. 14, l. 19).

A phoneme is the smallest unit of speech that can be used to distinguish one sound from another. A sequence of phoneme codes can be decoded into a literal string of words. The present invention employs a web page specific dictionary file to correlate phoneme files (including phoneme code sequences) to words that are associated with the particular GUI file. The phoneme files contain a number of production rules that define an allowable grammatical structure and limit the words that can be recognized in different parts of the grammatical structure. The phoneme files utilize intermediate labels or parse tags wherein the phoneme files include information correlating an utterance to parse tags and/or literal word strings. (p. 16, ll. 6-15). In operation, a phonetic stream is

analyzed to identify the syntactical or grammatical structure of the phoneme code sequence by matching the phoneme code sequence with one or more grammatical production rules stored in the syntax file to provide a basis for the possible phoneme code to utterance matches. The output of the speech decoding system is both a literal string corresponding to the decoded utterance such as "sharpen the pencil" plus the grammatical structure used in the decoding process including the production rules, parse tags, etc. (p. 16, l. 25 - p. 17, l. 2).

The present invention mitigates many of the problems associated with speed and accuracy of conventional speech decoding systems where extremely large syntax files are employed. Since, in the present invention, dictionary file(s) and syntax file(s) are specific to a given GUI file, the amount of phonemic data and rules stored therein is relatively small. In other words, the dictionary file and syntax file only needs to store sufficient amount of phonemic data and rules respectively to provide for speech recognition in connection with the associated web page. (p. 17, ll. 3-10).

VI. Statement of the Issues (37 C.F.R. § 1.192(c)(6))

A. Whether claims 1, 2, 4, 5, 8-18, 20, and 22 are patentable under 35 U.S.C. §103(a) as being as being obvious over Barclay *et al.* (U.S. 5,960,399).

VII. Grouping of Claims (37 C.F.R. § 1.192(c)(7))

For the purposes of this appeal only, the claims are grouped as follows:

Claims 1, 2, 4, 5, 8-18, 20, and 22 stand or fall together.

VIII. Argument (37 C.F.R. § 1.192(c)(8))

A. Rejection of Claims 1, 2, 4, 5, 8-18, 20, and 22 Under 35 U.S.C. §103(a)

Claims 1, 2, 4, 5, 8-18, 20, and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barclay *et al.* (U.S. 5,960,399). A reversal of the rejection is respectfully requested for at least the following reasons.

- i. Barclay et al. fails to teach or suggest communicating a dictionary file having phonemes and a syntax file having an allowable pattern of words from a host computer to a mobile device, as required by independent claims 1, 12, 18, 20, and 22.*

Barclay *et al.* does not teach or suggest the subject invention as claimed. Moreover, Barclay *et al.* teaches away from the subject invention.

To reject claims in an application under 35 U.S.C. §103 an Examiner must show an un rebutted prima facie case of obviousness. Generally, a prima facie case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. See MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

a. Barclay et al. Fails to Teach or Suggest all the Claim Limitations of the Claimed Invention.

With regard to the instant application, Applicant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness and instead, has mischaracterized the teachings of Barclay *et al.* in general, and further, improperly combined portions thereof with respect to the claimed invention. Independent claims 1, 12, 18, 20 and 22 recite in part: a host computer communicating a GUI file to a mobile terminal, the GUI file having attached thereto a dictionary file having phonemes and a syntax file having allowable patterns of words being content specific to the graphical display file.

Barclay *et al.* does not teach or suggest communicating a dictionary file having phonemes from a host computer to a mobile terminal. The Examiner relies on Col. 3, lines 6-23 of Barclay *et al.* to teach communicating a GUI file having attached thereto a dictionary file and a syntax file having allowable patterns of words to facilitate speech recognition and on Col. 2, lines 9-29 of Barclay *et al.* to teach communicating the dictionary file having phonemes. (See page 3 of the Office Action dated December 14, 2001, paper no. 17). However, Col. 2, lines 9-29 merely discusses employment of Hidden Markov Models (HMMs) and phonemes to decode speech. Nothing in Col. 2, lines 9-29 teaches or suggests communicating phonemes from a host computer to a mobile terminal. Accordingly, Col. 3, lines 6-23 is used to make up for these deficiencies. However, this

section discloses a speech recognition system called SAM that "requires the speech recognizer software to reside at the client." Further, this section discusses problems with downloading the vocabularies and grammars associated with the system at run time due to the large file sizes. Accordingly, one skilled in the art would not have been motivated by the teachings of Barclay et al. to also download phonemes for decoding speech along with the vocabularies and grammars from a host computer to a mobile terminal.

Further, nowhere in Barclay *et al.* is it taught or suggested that the HMMs or phonemes are communicated from a host computer to a mobile terminal in order to mitigate memory/processing requirements of the remote device as recited in the present invention. Therefore, claims 1, 12, 18, 20 and 22 are non-obvious over Barclay et al. Claims 2, 4, 5, and 8-11 depend from claim 1; and claims 13-17 depend from claim 12. Accordingly, a reversal of the rejection of claims 1, 2, 4, 5, 8-18, 20, and 22 is respectfully requested.

b. Barclay et al. Teaches Away from the Claimed Invention.

Moreover, Barclay *et al.* teaches away from the claimed invention.

A prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert denied, 469 U.S. 851 (1984). (See MPEP 2141.02). The Federal Circuit has noted: [A]s a "useful general rule," that references that teach away cannot serve to create a prima facie case of obviousness. *In re Gurley*, 27 F.3d 551, 553, 31 U.S.P.Q.2D (BNA) 1130, 1132 (Fed. Cir. 1994).

At page 4 of Paper No. 17, the Examiner responds that "However, this teaching (Barclay *et al.*) still renders it obvious to keep a limited vocabulary at the client machine." It is respectfully submitted that this argument and the disclosure in Barclay *et al.* teaches away from the benefits of the claimed invention which is to keep NO vocabulary - limited or otherwise, at the client machine.

At most, Barclay *et al.* discusses a technology referred to as SAM that enables smart WEB pages having downloadable grammar that is specific to syntax (*e.g.*, words and phrases) to be executed on a client machine. Examples of the downloadable grammar are given as "Show me the weather in Boston." (Col. 3, lines 6-15). Since only words and phrases are taught as being

downloaded in Barclay *et al.*, speech decoding mechanisms such as HMMs and phonemes must be resident at the client machine *a priori* in order to process speech. Barclay *et al.* validates this argument in Col. 3, lines 7-8, which states that SAM "requires the speech recognizer software to reside at the client". Accordingly, the purpose and utility of the claimed invention, which is to download a GUI file with a dictionary file having phonemes and a syntax file having allowable patterns of words to facilitate speech recognition attached thereto such that no vocabulary or speech decoding mechanisms are required at the client machine, is defeated by Barclay *et al.*

Therefore, storing additional data at the client machine to decode speech as suggested in Barclay *et al.* is a teaching away from the present invention. In view of the above, Barclay *et al.* does not make obvious claims 1, 12, 18, 20 and 22. Claims 2, 4, 5, and 8-11 depend from claim 1; and claims 13-17 depend from claim 12. Accordingly, a reversal of the rejection of claims 1, 2, 4, 5, 8-18, 20, and 22 is respectfully requested.

IX. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1, 2, 4, 5, 8-18, 20, and 22 be reversed.

Respectfully submitted,
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X. Appendix of Claims (37 C.F.R. § 1.192(c)(9))

1. A speech recognition system, comprising:
a host computer, the host computer operative to communicate at least one graphical user interface (GUI) display file to a mobile terminal, the GUI display file having attached thereto at least one of a dictionary file having phonemes and syntax file having allowable patterns of words to facilitate speech recognition, wherein the at least one of a dictionary file and syntax file are content specific to the GUI display file;
the mobile terminal including a microphone for receiving speech input; and
wherein the mobile terminal employs the at least one of a dictionary file and syntax file to facilitate speech recognition in connection with the at least one GUI display file.
2. The system of claim 1, the host computer including a memory, the memory storing a plurality of GUI display files.
4. The system of claim 1, wherein the dictionary file is stored in a memory of the host computer.
5. The system of claim 1, wherein the syntax file is stored in a memory of the host computer.
8. The system of claim 1, wherein the mobile terminal maps sequences of the phonemes to operator instructions via the dictionary file and syntax file.
9. The system of claim 1, wherein the at least one GUI display file is communicated via packet format.
10. The system of claim 1, wherein the host computer informs the mobile terminal of the file size of the at least one GUI display file.
11. The system of claim 1 employing a platform independent architecture based on JAVA.

12. A mobile terminal having speech recognition capabilities, comprising:
a processor;
a display operatively coupled to the processor, the display adapted to display at least one graphical user interface (GUI);
a speech recognition system for identifying speech commands from a user, the speech recognition system operative to employ at least one of a dictionary file having phonemes and a syntax file having allowable patterns of words attached with at least one GUI file to map sequences of the phonemes to operator instructions, the at least one of a dictionary file and a syntax file being content specific to the at least one GUI file, the at least one GUI file received from a location remote to the mobile terminal; and
wherein the scope of speech recognition associated with the dictionary file and syntax file are focused to recognizing utterances which correspond to valid inputs to the at least one graphical user interface file so as to minimize data processing requirements of the mobile terminal.
13. The mobile terminal of claim 12 the remote unit including a memory for storing a plurality of GUI display files.
14. The mobile terminal of claim 12, wherein the dictionary file and syntax file are attached to the GUI display file.
15. The mobile terminal of claim 12 wherein the dictionary file and syntax file are stored in the memory of the mobile terminal.
16. The mobile terminal of claim 12 wherein the dictionary file and syntax file are stored in the memory of a remote unit.
17. The mobile terminal of claim 12, wherein the remote unit is a host computer.
18. A method for facilitating speech recognition associated with a graphical user interface (GUI), comprising the steps of:

receiving at least one GUI display file of a plurality of GUI display files from a remote location to input commands to a unit, the unit adapted to receive input commands via speech;

receiving a dictionary file having phonemes and a syntax file having allowable patterns of words in connection with the at least one GUI display file from the remote location, the dictionary file and the syntax file being content specific to the at least one GUI display file, including reference data corresponding to commands that may be input to the unit via speech; and

wherein the reference data facilitates speech recognition in connection with the at least one GUI file.

20. A remote client computer operative to receive a graphical user interface (GUI) file from a remote host computer, the GUI file including display data for prompting a user to input at least one of a command and data, the GUI file further including utterance recognition data, the utterance recognition data including a dictionary file having phonemes and a syntax file having allowable patterns of words in connection with the GUI file, wherein the utterance recognition data is content specific to the GUI file and facilitates speech recognition of a limited quantity of utterances associated with a limited set of commands and inputs that can be input to a display generated from the GUI file.

22. A data collection network comprising:

a host computer operating a first data collection application manipulating data received from a plurality of mobile computing devices; and

a mobile computing device operating a second data collection application generating a plurality of graphical display contexts prompting a user data input and associating with each graphical display context at least one of a dictionary file having phonemes and a syntax file having allowable patterns of words, the at least one of a dictionary file and syntax file including reference data corresponding to at least one of a limited permutation of data and commands which may be input via speech in each context, the mobile computing device transmits the data to the host, wherein the at least one of a dictionary file and a syntax file are received from the host computer and are content specific to the graphical display context.